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ABSTRACT

This study presents a quantitative analysis of cohesion of the academic writing of Chinese English-as-a-Second-Language (ESL) graduate students by applying Halliday and Hansen's (1976) model. Six Chinese graduate students from a Midwestern university were selected for the study, representing two proficiency levels in written English--advanced and intermediate. Eighteen of their papers were analyzed, representing three academic genres: definition, analytic, and research. The analysis was conducted across both genre and proficiency level. The results of the analysis indicate that personal and demonstrative reference, additive and temporal conjunctions, and lexical repetition were strongly favored in all three genres by both proficiency groups. However, the advanced group employed significantly more cohesive ties in some of the categories than did the intermediate group. These variations do not support the argument that there is no relationship between linguistic ability and writing ability. (Contains 39 references.) (KFT)

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A Quantitative Study of Cohesion in Chinese Graduate Students' Writing: Variations Across Genres and Proficiency Levels

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This study presents a quantitative analysis of the cohesion of the academic writing of Chinese ESL graduate students by applying Halliday and Hasan's (1976) model. Six Chinese students from a midwestern university were selected for the study, representing two proficiency levels in written English: advanced and intermediate. Eighteen of their papers were analyzed, representing three academic genres: definition, analytic, and research. The analysis was conducted across both genres and proficiency levels. The results of the analysis indicate that personal and demonstrative reference, additive and temporal conjunctions, and lexical repetition were strongly favored in all the three genres and by both proficiency groups. However, the advanced group employed significantly more cohesive ties in some of the categories than did the intermediate group. These variations do not support the argument that there is no relationship between linguistic ability and writing ability. (Kaplan & Palhina, 1982)

Studies in contrastive rhetoric and second language writing have revealed that the differences between non-native and native speakers' writing in terms of cohesion is closely related to much broader areas of linguistic and cultural differences: thought pattern, writing organization, writing style, language, and writers' perception of cohesion.

Kaplan (1966), for instance, claims that different cultures reveal different thought patterns. He further proposes that Westerners follow a linear pattern of thought, whereas Orientals tend to move in a nonlinear, often a circular fashion. Accordingly, the western writing style is linear and hypotactic, while the eastern writing style (especially Chinese writing style) is largely nonlinear and paratactic. The difference between hypotaxis and parataxis would result in a difference in the concept of cohesion: Westerners rely on textual devices for cohesion and favor a linear development of ideas, whereas Orientals, more often than not, favor notional connections by omitting textual cohesive ties via zero anaphora, ellipsis, and omission of transitional words.

The thought pattern differences shape the writing organization differences. Western writing organization followed a five-part structure of oration proposed by Cicero and Quintilian, and later developed into a seven-part structure: exordium (introduction), narration, thesis, division, confirmation, refutation, and peroration (conclusion), a widely accepted organization pattern for both speech and writing (Corbett, 1990). Chinese writing, however, followed a rigid

organization pattern known as *ba gu* (the "eight-legged essay"). Matalene (1985) reports:

> The content of the eight-legged essay was Confucian; its form was rigidly prescribed. Exposition of the theme was followed by a discussion of its significance; then came the argument itself followed by the "turn" in the argument; at the end, carefully balanced conclusions were set forth. Each of the last four paragraphs had to contain both parallel structure--always highly valued in Chinese writing--and antithetical structure, hence the eight legs (p. 797)

Revolting against the rigidity of *ba gu*, modern Chinese writing has become somewhat looser and more flexible in organization, and it follows an inductive pattern in overall organization, but it does not require a prescribed five-part organization similar to *ba gu*.

Related to the writing organization difference is the writing style difference. Western prose style has witnessed a shift from Ciceronian style, which is marked by parallelism, elaboration, and embellishment, to anti-Ciceronian style in the seventeenth century, which diverged in two distinct directions: curt style and loose style. By contrast, Chinese prose style seems to have developed in an opposite direction. The originally terse and compact classical style that suited *ba gu* gave way to looseness and embellishment. Many prose writers seem to pay more attention to the aesthetic values of expressions at the expense of organization, hence becoming more indirect. In addition, Young (1982) notices several distinctive Chinese discourse features: "The Chinese discourse patterns seem to be the inverse of English discourse in that definitive summary statements of main arguments are delayed till the end" (p. 75). Moreover, though there is a "systematic pattern in the organization and presentation of information," Chinese seem to prefer "the steady unraveling and build-up of information before arriving at the important message" (Young, 1982, p. 77). Sentence connectives which play an essential role in guiding the listener's journey through the discourse, however, have been replaced in writing by Chinese L1

speakers "with meanings which are somewhat different from their usual associations in English" (Young, 1982, p. 79). For example, in Chinese discourse, single-word items such as "because," "as," and "so" have replaced clause connectives commonly used in English, such as "in view of the fact that," "to begin with," or "in conclusion" (Young, 1982, p. 79).

Behind the writing style differences lay the language differences. According to current linguistic studies, one of the outstanding differences between English and Chinese is that English is a subject-prominent language while Chinese is mainly a topic-prominent language. Li and Thompson (1976) illustrate basic subject-predicate and topic-comment structures as follows:

na	ke	shù	shù	ye	dà	wo	bù	xihuan
That	tree	tree	leaves		big	I	don't	like ∅

The leaves of that tree are big, and I don't like them.

The use of a double subject and the lack of coreferentiality and overt causality linkage marker in the Chinese version explain why Chinese often relies on notional connectivity rather than on formal connections, and hence it is often regarded by westerners as incohesive.

Not only do language differences contribute to the problem of cohesion, but the learners' perceptions of the differences between English and Chinese writing also indicate that there is little correspondence between Chinese and western concepts of cohesion. In our interviews with Chinese graduate students who participated in our study, most admit that, according to their own writing experiences, there is not much difference between English and Chinese prose in terms of overall organization, but there is a marked difference in terms of the use of cohesive ties. More often than not, they agree, rather than relying on connective words for cohesion, Chinese learners would look for notional or logical connectivity for interclausal connection.

These five areas of differences highlight some of the major issues essential to this study.

Rather than intending to explore the differences between Chinese and English academic writing, we limit ourselves to the examination of the variations and commonalities of Chinese graduate students' academic writing across both genres and proficiency levels, in the hope that the results of our analyses would shed some light on the discourse features of Chinese graduate students' academic writing, which might be of some help to the teaching of the second language writing. The research questions of our study are as follows:

1. Is there any variability in terms of overall cohesiveness in Chinese ESL graduate students' academic writing across both genres and proficiency levels?

2. Does Chinese students' academic writing exhibit any central tendencies or common features in terms of coding textual cohesion?

3. Is there any relationship between Chinese ESL students' linguistic ability and writing ability?

To address these questions, this study presents a quantitative study of cohesion in Chinese ESL graduate students' academic writing, focusing on the subjects' use of the major local cohesive devices in composition class writing assignments. In conducting such a study, we examined three academic genres: definition, analytic, and research papers. In addition, the variations of the subjects' performance at two proficiency levels --- intermediate and advanced --- were also examined. The theoretical framework use for the study is Halliday and Hasan's (1976) model, with some modifications made by limiting the examination to three broad categories: coreference, conjunction, and lexical cohesion.[1] Each of these categories is further divided into

[1]Prior to the current study, we conducted a pilot study to examine Chinese graduate students' writing assignments using Halliday and Hasan's (1976) model. The results indicate that Chinese students' writing exhibits a great deal of use of coreference, conjunction, and lexical cohesion while lacking evidence for the use of substitution or ellipsis.

subcategories, from which cohesive ties were quantified and compared.

Subjects

A total of six students participated in the present study. Three of them were selected from the intermediate, and three were selected from the advanced English rhetoric and composition classes required of most international graduate students at the university. All these students were native Mandarin speakers from the People's Republic of China (PRC) and had been in the United States for between one and five years. Four of these students had been in the United States for only one year, and two of them had been here for between two to five years.

Educational Background

Graduated from accredited educational institutions in the PRC, these students obtained Bachelor's or Master's degrees before coming to the U.S. and were all pursuing graduate studies at a medium-sized Midwestern university with a variety of majors including computer science, mathematics, statistics, and electrical engineering. None of them were English majors.

Educated under a uniform educational system in the PRC, these students were required to study English for six years in high school and two more years at university. After completing an undergraduate program, those who pursued graduate studies were required to take advanced English courses for additional one to two years.

The emphasis of these students' English training was mainly on the mastery of vocabulary,

grammar, and reading comprehension, with very little focus on writing. However, all the participants in the present study had far more formal training in writing in Chinese, beginning with the third year of elementary school throughout the six years of high school and even extended into the first two years of university.

English Proficiency of the Subjects

The six participants were classified into two groups in terms of their English proficiency level: intermediate and advanced. The classification was made in accordance with their placement in one of the two English rhetoric and composition courses at the university. The placement labels "intermediate" or "advanced" were maintained in this study as well.

All these students achieved relatively high TOEFL scores with some variation between the two groups as shown in Table 1. The students of the intermediate group achieved a TOEFL score ranging from 560 to 600. Their TOEFL mean was 582.3, and the standard deviation was 20.4.

Table 1

Participants' TOEFL Scores

Intermediate		Advanced	
Student	TOEFL	Student	TOEFL
1	560	1	613
2	600	2	633
3	587	3	600
	M = 582.3		M = 615.3
	SD= 20.4		SD= 16.6

The students of the advanced group achieved a TOEFL score ranging from 600 to 633. Their TOEFL mean was 615.3, and the standard deviation was 16.6. Comparatively, the advanced group achieved a somewhat higher level of English proficiency with less variability than the intermediate group before they started to take English rhetoric and composition courses.

Status of the Subjects

All six participants took English rhetoric and composition I in Fall 1995 and English rhetoric and composition II in Spring 1996.[2] They registered in two parallel intermediate and two

[2] I and II are not official course numbers, and we use them as shorthand.

parallel advanced English rhetoric and composition I classes in the fall semester. In the spring semester, they continued in two parallel intermediate and two parallel advanced English rhetoric and composition II classes. English rhetoric and composition I includes some personal writing but provides a great amount of transition from personal to academic genres. English rhetoric and composition II, however, is solely concentrated on writing a variety of academic discourses. These two courses encouraged students to relate their writing to their majors and trained them to advance their writing ability for the successful completion of their graduate studies at university and for their future academic communication in their own fields.

Procedures

Data

The data collected for the current study comprise participants' writing assignments for the English rhetoric and composition courses. For both intermediate and advanced classes, all the papers that students wrote for English rhetoric and composition I and II throughout the 1995/1996 academic year were collected with the exception of their in-class writing and different types of in-class or computer-lab exercises.

These writing assignments cover a variety of academic genres: definition paper, serializing paper, classification paper, summary paper, analytic paper, research paper, and exam papers. A total of eighteen papers written by the six participants (3 papers for each) throughout the 1995-1996 academic year were used for the present study. These chosen papers cover three major

academic genres: definition, analytic, and research papers. Other papers and assignments were excluded from the current study. At the end of each semester, we obtained from the course instructors the students' portfolios, which contained most of the writing done throughout the semester. Some of the participants also provided softcopies (on diskette) of their work. Copies of each paper under study were made and portfolios returned to the instructors.

Reduction of the Scope of Subjects and Data

The original pool of subjects and data was much larger than that for the current study. This original pool included a total of 26 students with a total of 189 papers. In order to conduct in-depth and focused analyses of the data, we reduced the scope of the subjects involved and the data collected for the present study. Two procedures were followed for this purpose.

First, of the 26 students, three were chosen out of each intermediate and advanced group for the study. However, the selection of three subjects varied between intermediate and advanced groups. In the intermediate group, seventeen students registered for English rhetoric and composition I and sixteen continued to sign up for English rhetoric and composition II. Out of this pool, three subjects were randomly selected by the following two criteria: they took both English rhetoric and composition I and II in the academic year while remaining in the same proficiency level. In the advanced group, the situation is different. Nine students registered for English rhetoric and composition I, but only four took English rhetoric and composition II. Of these four students, one took the intermediate-level English rhetoric and composition I in the fall semester and then switched to an advanced class in the spring semester (an unusual case). This

student was eliminated from the pool for the focused study. With the remaining three students who took both courses at the same proficiency level, there was no more room for random selection. All three students were chosen for the focused study. As a result, a total of six students were chosen for the study with three from each proficiency level.

Second, out of the six genres of writing assignments, only three shared by the two groups were selected for analysis in this study. Each participant provided one sample of each selected genre (definition, analytic and research) for a total of eighteen papers.

The rationale for choosing these three genres was twofold: 1) these genres were shared assignments in both intermediate and advanced classes, while the other genres were not, and 2) the three chosen genres were most representative of academic writing in general. The relationship between the number of chosen subjects and the number of writing genres is shown in Table 2.

Table 2

Distribution of Numbers of Subjects and of Writing Genres

	Definition (Total/genre)	Analytic (Total/ genre)	Research (Total/genre)	Total
Intermediate (number of students)	3	3	3	9
Advanced (number of students)	3	3	3	9
Total	6	6	6	18

Results

The results of our study are reported at two levels: cohesion across genres and cohesion across proficiency levels.

Cohesion Across Genres

The analysis of cohesion across genres focuses on how the subjects as a homogeneous group treat local cohesive devices differently in the three different academic genres. The results are presented separately in terms of coreference, conjunction, and lexical cohesion. Quantification

of cohesive ties in each of these categories is reported in detail

Coreference

The analysis of coreference deals with personal reference, demonstrative reference, and comparative reference. The occurrences of coreference in these three subcategories were quantified, and one-way repeated measures ANOVAs were conducted to test for differences in the use of these categorical cohesive ties across the three genres. The results of the examination are presented in Table 3.

Table 3

Coreference Across Genres

	Definition Paper	Analytic Paper	Research Paper	ANOVA
	mean	mean	mean	*F*
PR	49.83	102.33	110.17	1.88 (ns)
DR	39.83	51.33	83.33	2.77 (ns)
CR	2.67	4.67	8	1.42 (ns)

PR = Personal Reference
DR = Demonstrative Reference
CR = Comparative Reference
$_{\alpha}F_{2,10} = 3.14$

There is not much difference in the usage of personal reference across the three genres. The results of one-way repeated measures ANOVA tests confirm the fact that the differences in the use of the three categories of coreference across the three genres are not significant.

However, one feature that stands out is that the three genres all show a strong preference for personal reference and demonstrative reference: the means of personal reference and demonstrative reference being higher than those of comparative reference. Apparently, comparative reference was disfavored in all the three genres with the mean in these genres ranging only between 2.67 and 8.

Another outstanding feature is that both the analytic paper and the research paper have a higher mean of personal reference than the definition paper. The reason for this difference is perhaps that the analytic paper is related to the theory and personal experiences of culture shock.[3] Much space in the analytic papers was devoted to the exemplification of different stages of culture shock related to their own experiences or someone else's. Hence more personal reference was used to establish cohesive ties. The research paper, likewise, shows similar features. Half of the research papers (those done by the advanced class) were related to interviews of scholars who talked about their own writing experiences in academic writing. As a result, personal reference was heavily involved in this genre.

[3]Before writing the analytic paper, the students were prompted to relate personal experiences (their own or someone else's) to Pamela Brink and Judith Saunders' four phases of culture shock theory (Kiniry & Rose, 1993, pp. 301-312). For the definition paper, the students were given the prompt to define any concepts of their own choice. The prompts for the research paper were different for the two classes. In the intermediate class, the students were asked to write argumentative research papers based purely on research. The students of the advanced class, however, were required to conduct interviews of their instructors or fellow students and were prompted to base their research paper on the interviewees' experiences and attitudes towards academic writing.

Still another feature is that there is some nonsignificant variation in the category of demonstrative reference with the *F* value being close to the critical value. The research paper has a higher mean than the other two genres (83.33 versus 39.83 and 51.33). This difference suggests that the research paper uses more demonstrative reference than the two other genres.

Conjunction

The examination of the use of conjunctions was limited to the four categories as proposed by Halliday and Hasan (1976) without modification: additive, adversative, causal, and temporal conjunctions. The results of the examination are presented in Table 4.

Table 4

Conjunction Across Genres

	Definition Paper	Analytic Paper	Research Paper	ANOVA
	mean	mean	mean	*F*
Additive	1.5	2.83	10.67	1.81 (ns)
Adversative	2.67	5.17	5.5	1.28 (ns)
Causal	3.33	3.67	5.33	.61 (ns)
Temporal	6.5	8.33	10.33	3.11 (ns)

$_{ns}F_{2,10} = 3.14$

Despite some variation among the three genres, one-way repeated measures ANOVA tests show that none of the conjunctions used in these four categories reveal significant differences across the three genres.

However, there are two tendencies that merit discussion. First, in the category of additive conjunction, the means for the definition paper and the analytic paper are close, but the research paper has a much higher mean (10.33 versus 1.5 and 2.83), coding more additive conjunctions than do the definition paper and the analytic paper. The reason that the research paper exhibits more use of additive conjunctions may be that it relies on notional or conceptual connectivity via the use of additive conjunctions.

Second, with regard to temporal conjunctions, the research paper has a slightly higher mean than do the definition paper and the analytic paper (10.33 versus 6.83 and 8.33). Furthermore, compared with their own uses of the other types of conjunctions, almost all the three genres show a higher mean of temporal conjunctions than the other types of conjunctions with the exception of the research paper in the category of additive conjunctions. The preference for temporal conjunctions in these three genres might suggest that these genres rely more upon temporal than other cohesive ties for discourse development. Since temporal sequencing is closely related to personal experience, the use of temporal conjunctions may be an appropriate way of achieving textual cohesion in relating personal experience.

Lexical Cohesion

Following Halliday and Hasan (1976), we examined the use of four categories of lexical

cohesion in the students' writing samples: same word, synonym, superordinate, and general word, and also conducted one-way repeated measures ANOVA tests to determine whether significant differences exist across the three genres. The results of the examination are shown in Table 5.

Table 5

Lexical Cohesion Across Genres

	Definition Paper	Analytic Paper	Research Paper	ANOVA
	mean	mean	mean	*F*
Same word	32	25.5	75.83	2.65 (ns)
Synonym	1.17	2.83	2.83	1.66 (ns)
Super-ordinate	.17	.17	.33	.31 (ns)
General Word	.33	3	.83	1.08 (ns)

$_{95}F_{2,10} = 3.14$

Regardless of any variation, the results of ANOVA tests show that none of the lexical cohesive ties used in these four categories reveal significant differences across the three genres.

However, there is one point worthy of discussion. The use of the same word as a lexical cohesive tie in all three genres shows a much higher mean use than that of other lexical cohesive

ties. The results suggest that these Chinese students had a strong preference for the repetition of the same word as a lexical cohesive device, while the other lexical cohesive devices were disfavored or ignored. This finding is compatible with that of our pilot study and of other researchers (Li & Thompson, 1981; Okurowski, 1989; Tsao, 1982) who find that Chinese ESL writers tend to rely on zero anaphora and lexical repetition for textual cohesion.

Cohesion Across Proficiency Levels

The study of cohesion across proficiency levels was based on the examination of the same data but viewed from a different perspective. Rather than treating the participants as one homogeneous group, we viewed them as two separate groups with different proficiency levels. The differences of genres, however, were eliminated, and all the three genres were treated as a single homogeneous writing genre. The study focuses on how the two groups of participants with different proficiency levels treated cohesion differently with respect to their writing assignments, and in order to validate the study, we conducted independent measures *t*-tests to test each category of cohesive devices used. The results of the analysis are reported in relation to the three major categories of cohesion: coreference, conjunction, and lexical cohesion.

Coreference

The results of the treatment of coreference by the two groups of participants are shown in Table 6. Coreference was examined in terms of personal reference, demonstrative reference, and

comparative reference.

Table 6

Coreference Across Proficiency Levels

	mean (Advanced)	mean (Intermediate)	*t*-test
PR	132	42.89	2.88*
DR	66.56	49.78	1.00 (ns)
CR	4.67	5.56	-.56 (ns)

PR = Personal Reference
DR = Demonstrative Reference
CR = Comparative Reference

$_{95}t_{16} = 2.12$
* $p < .05$

Table 6 shows that there is variation between the two groups in the use of the three categories of coreference. Two-sample independent measures *t*-tests reveal that there are no significant differences between the two groups in the use of demonstrative and comparative reference. However, there is a significant difference in the use of personal reference, ($t[16] = 2.88$, $p < .05$, two-tailed). The difference reveals the fact that the advanced class used significantly more personal pronouns as a cohesive tie than did the intermediate class. Since the use of personal reference presupposes shared knowledge with the reader, it can be inferred that the advanced class attempted to establish more familiarity with the audience than the intermediate class through coding personal reference in their writing.

Conjunction

The results of the quantification of conjunctions used by the two groups of students are presented in Table 7.

Table 7

Conjunction Across Proficiency Levels

	mean (Advanced)	mean (Intermediate)	*t*-test
Additive	7.67	2.33	1.60 (ns)
Adversative	5.78	3.11	1.83 (ns)
Causal	4	4.22	-.12 (ns)
Temporal	13	3.8	4.38*

ns $t_{16} = 2.12$
* $p < .01$

Table 7 shows that, overall, the advanced group uses more conjunctions than the intermediate group in all categories except causal conjunctions. However, *t*-test results demonstrate that the only significant between-group difference is in $t[16] = 4.38$, $p < .05$, two-tailed.

While the above analyses reveal that the advanced group is significantly different from the

intermediate group only in the use of temporal conjunctions, the advanced group has a higher mean of both additive and adversative conjunctions than does the intermediate group. This fact suggests that the advanced group coded more conjunctions as cohesive ties than did the intermediate groups. In addition, since addition, adversativity, and temporality imply sequentiality, these differences suggest that the advanced group seems to favor the sequential progression of ideas through additive (or adversative) and temporal conjunctions, which in general enhances readability and comprehensibility. The intermediate group, by contrast, employs less addition, adversativity, or temporality, and as a result, their writing is relatively less readable and comprehensible.

Lexical Cohesion

The results of quantifying lexical cohesion across these two writing groups are shown in Table 8.

Table 8

Lexical Cohesion Across Proficiency Levels

	mean (Advanced)	mean (Intermediate)	*t*-test
Same word	49.33	39.56	.62 (ns)
Synonym	3.67	.89	3.02*
Super-ordinate	.22	.22	0 (ns)
General Word	2	.78	1.08 (ns)

$_{ns}t_{16} = 2.12$
* $p < .01$

There is no variation between the two groups in the use of superordinates both with a mean of .22, and two-sample independent measures *t*-tests demonstrate that there is a significant difference only in the category of synonym, (t[16], = 3.02, $p < .05$, two-tailed).

The above analyses reveal two interesting trends. First, the two groups have a strong preference for lexical repetition to achieve textual cohesion. The advanced group has a mean of 49.33, and the intermediate group a mean of 39.56, both being much higher than that of the other categories. Since lexical repetition is a basic and less sophisticated means of cohesion, the predominant preference of the two groups for lexical repetition reveals that the two groups

favored or were used to using lexical repetition while disfavoring or being unaccustomed to using other more sophisticated means of lexical cohesion such as synonyms or superordinates (along with hyponyms or cohyponyms).[4] However, these differences were not found to be statistically significant.

Second, though neither group shows a large mean of using sophisticated lexical cohesive devices such as synonymy and superordination, the advanced group did employ significantly more synonyms than the intermediate group with a mean of 3.67 versus .89. This difference suggests that the writing of the advanced group demonstrates a relatively higher level of sophistication than that of the intermediate group because the writers used more sophisticated means of lexical cohesion than mere lexical repetition.

[4]In the analysis across genres, this predominance of lexical repetition was also found

Test of Overall Variance

A two-factor split-plot ANOVA was conducted to test the overall variation of cohesion across genres and proficiency levels. The data used for the test were the same data reported above concerning coreference, conjunction, and lexical cohesion.[5] The ANOVA summary is presented in Table 9

[5]The raw data in each cell represent the sum of the occurrences of cohesive ties in the categories of coreference, conjunction, and lexical cohesion employed by each subject in the relevant writing genre.

	Subject	Definition	Analytic	Research
	1	93	124	389
Intermed	2	136	85	77
	3	148	132	194
		Definition	Analytic	Research
	4	110	442	407
Advanced	5	168	211	405
	6	185	265	407

Table 9

ANOVA Summary Table

Source	*SS*	*df*	*MS*	*F*
BETWEEN SUBJECTS				
Proficiency level	82960.222	1	82960.222	15.75[a]*
$Error_{P}$	21069.111	4	5267.278	
WITHIN SUBJECTS				
Genre	91082.333	2	45541.167	5.71[b]*
Proficiency*Genre	25840.778	2	12920.389	1.62[b](ns)
$Error_{(G,P*G)}$	63851.556	8	7981.444	
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Total	284804.000	17		

[a] $_{.95}F_{1,4} = 7.71$
[b] $_{.95}F_{2,8} = 4.46$
* $p < .05$
--Subscripted P refers to "proficiency level," subscripted G refers to "Genre," and subscripted P*G refers to the interaction between proficiency level and genre.

The ANOVA test shows a significant difference in overall cohesion between the two proficiency groups, $F(1,4) = 15.75$, $p < .05$; significant differences among the three genres, $F(2,8) = 5.71$, $p < .05$; but no significant differences in the interaction between proficiency and genre, $F(2,8) = 1.62$, $p > .05$. The means and standard deviation are presented in Table 10.

TABLE 10

Mean Number of Cohesive Ties in Each Treatment Condition

		GENRE		
		DEF	ANAL	RESCH
	INT	M=125.67	M=113.67	M=220.00
		SD=28.92	SD=25.15	SD=157.62
PROFICIENCY				
	ADV	M=154.33	M=306.00	M=406.33
		SD=39.32	SD=120.83	SD=1.15

A post-hoc Tukey (HSD) test was also conducted for multiple comparisons to determine where the actual differences lie. The results of the test indicate that the differences among the three genres reside only between the definition paper and the research paper at a $p < .05$ level. The three genre means are 313.17, 209.83, and 140 respectively for the research paper, the analytic paper, and the definition paper, and the minimum significant difference is 147.39. Statistically significant differences also exist between the two proficiency levels at a $p < .05$ level. The two proficiency group means are 288.89 for the advanced class and 153.11 for the intermediate class, and the minimum significant difference is 94.99.

Discussion

The results of the split-plot ANOVA test demonstrate that though there is no interaction effect between the genre and the proficiency level, there are, however, statistically significant

mean differences between the two proficiency groups and across the three genres with respect to the use of cohesive ties in the categories of coreference, conjunction, and lexical cohesion. These results are compatible with the analyses reported prior to that of the ANOVA. Further discussion will assist in exhibiting the differences.

In the category of coreference, personal reference and demonstrative reference were strongly favored in all the three genres. But comparing the two proficiency groups, one can see that the advanced group has a significantly higher mean use of personal reference than does the intermediate group, whereas the latter has a nonsignificantly higher mean of comparative reference than the former. Some possible interpretations may be: 1. personal and demonstrative reference are common referential cohesive ties which Chinese students are used to using in Chinese discourse; 2. the advanced group uses more personal reference partly because its members respond more to the writing prompts and partly because their higher proficiency in English makes them more adept at incorporating their personal experiences into their academic writing, hence rendering their writing more coherent.

In the category of conjunction, the results of the two levels of study are equally revealing. Additive and temporal conjunctions seem to be the two most common conjunctive cohesive devices favored in most genres and by both proficiency groups. As shown by the results of the study across the genres, the research paper seems to favor additive conjunctions, whereas the definition paper seems to favor temporals. But looking across proficiency levels, one can see that the advanced class obviously used more additive and temporal conjunctions while the intermediate group used slightly more causal conjunctions. Since additives and temporals encode the more common and easier to read method of paragraph development -- sequentiality -- the writing of the

advanced group seems to be organized in a linear and sequential fashion. The intermediate group, however, may opt for the more difficult method of paragraph development of logical progression by means of causality in order to compensate for their lower proficiency.

In the category of lexical cohesion, both levels of the study indicate that the use of lexical repetition is predominant in all the genres and by both proficiency groups. This fact suggests that Chinese students were used to employing lexical repetition as a main lexical cohesive device while being unaccustomed to the more sophisticated lexical cohesive devices in their writing. However, comparing the two proficiency groups, one can see that the advanced class uses significantly more of the sophisticated lexical cohesive device of synonymy than does the intermediate class, as might be expected. They also use more general words, but not at a statistically significant level.

Despite these variations at both levels, there seems to be more variations across the proficiency levels than across the genres. Though the two-factor split-plot ANOVA reveals significant variations across the genres, the in-depth categorical analyses do not exhibit significant variations. By contrast, with the variations across the proficiency levels, both categorical and overall analyses indicate that variations are statistically significant both categorically and in totality. These findings suggest that Chinese graduate students' writing demonstrates more variations across the proficiency levels than across the genres.

Also, coupled with the difference of proficiency levels of the two groups, the higher variations across the proficiency groups found in the current study do not seem to support the argument that there is no relationship between linguistic ability and writing ability just as there is no relationship between spoken skills and writing skills (Kaplan and Palhina, 1982). Kaplan and Palhina argue that mastery of adequate spoken skills does not necessarily guarantee mastery of

adequate writing skills because writing skills do not automatically transfer from speaking skills. Nor does linguistic ability ensure writing ability. This is particularly true of non-native speakers of English, whose proficiency in spoken English or whose proficiency in English vocabulary and grammar does not guarantee that they are able to produce cohesive writing in English to meet the cultural expectations of Americans in the U.S. academic context.

This argument sounds reasonable because linguistic ability is only part of writing ability, whose role is to ensure the composition of well-formed sentences. There is no necessary relationship between the ability to write grammatically well-formed sentences and the ability to compose rhetorically effective sentences or prose. To be able to write rhetorically effective sentences and prose requires knowledge and skills beyond the knowledge of grammar and vocabulary. In addition, the mere combination of grammatically well-formed sentences does not lead to good paragraphs or discourse. To be able to write good paragraphs or discourse requires writers to be able to write effectively in order to meet the general rhetorical standards of unity, coherence, adequacy of development, sense of audience, and propriety of tone, as well as diverse genre specifications.

However, the results of the present study do not support these arguments. Instead, they seem to suggest that linguistic ability -- as measured by a standardized test of English Proficiency and by local placement measures -- and writing ability are related in some way though there is no absolute relationship between them. While the TOEFL scores of all the participants do indicate that they had achieved adequate English proficiency for graduate study, the mean differences between the two groups are also evident, indicating that the two writing groups belong to different proficiency levels in English. As this research indicates, the difference of proficiency

levels does account for the difference of cohesiveness in their writing.

The above research results are merely the first step in our current project. To deepen our study, we hope to conduct further in-depth analyses of the variations of cohesiveness in the participants' writing samples from different perspectives. The results, we believe, will shed more light on the nature of Chinese ESL students' writing and contribute to the ongoing study of ESL students' writing as a whole.

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